

Listing of Claims:

1. A photosensor system comprising:

a photosensor array including a plurality of photosensors in a two-dimensional array; ~~constituted by two dimensionally arraying a plurality of photosensors,~~

5 image reading means for reading a subject image at a predetermined reading sensitivity by the photosensor array; [[:]]

pre-reading means for reading causing the subject image ~~prior to image reading operation while changing an~~ to be read by different regions of the photosensor array using different image
10 reading ~~sensitivity sensitivities in of the photosensor array at~~
a plurality of stages, prior to an image reading operation by the
image reading means;

optimal reading sensitivity extraction means for extracting an optimal image reading sensitivity suitable for the image
15 reading operation based on the basis of a comparison of
predetermined measurement ~~amount relating~~ amounts which relate to
~~an image pattern~~ patterns of the subject image read by said pre-
reading means and which correspond to the different regions of
the photosensor array; and

20 reading sensitivity setting means for setting the optimal image reading sensitivity to a reading sensitivity of said image reading means.

2. (Currently Amended) ~~A~~ The system according to claim 1, wherein ~~said reading by the image reading means~~ the image reading operation is executed by setting the different image reading sensitivities stepwise for respective rows of the photosensor array and reading the subject image.

3. (Currently Amended) ~~A~~ The system according to claim 1, wherein the predetermined measurement ~~amount in said reading sensitivity extraction means is~~ amounts comprise lightness data corresponding to the image pattern of the subject image read by a pre-reading operation of the pre-reading means.

4. (Currently Amended) ~~A~~ The system according to claim 1, wherein the image reading sensitivity of the photosensor array is set by adjusting a photosensor charge accumulating period ~~of the photosensor~~.

5. (Currently Amended) ~~A~~ The system according to claim 1, ~~which further comprises, in said image reading means and said pre-reading means in the photosensor array,~~ effective voltage adjustment means for applying to each photosensor a correction signal for setting ~~to optimal values~~ effective voltages of signal voltages applied to each photosensor to optimal values.

6. (Currently Amended) ~~A~~ The system according to claim 1,
wherein said reading sensitivity extraction means comprises:

measurement amount comparison means for extracting maximum
and minimum values of ~~the~~ a measurement amount relating to the
5 image pattern of the subject image for each of the
different image reading ~~sensitivity~~ sensitivities based on the
~~basis of~~ the subject image read by the pre-reading ~~operation~~
means;

dynamic range calculation means for calculating a dynamic
10 range of the measurement amount based on ~~the basis of~~ the maximum
and minimum values of the measurement amount extracted for each
of the different image reading ~~sensitivity~~ sensitivities; and

maximum dynamic range extraction means for extracting an
image reading sensitivity having a maximum dynamic range among
15 dynamic ranges of the measurement amounts calculated for ~~each~~ the
image reading ~~sensitivity~~ sensitivities.

7. (Currently Amended) ~~A~~ The system according to claim 6,
wherein said measurement amount comparison means extracts the
maximum and minimum values of the measurement amount in a
predetermined column range of each row.

8. (Currently Amended) ~~A~~ The system according to claim 1,
wherein said reading sensitivity extraction means comprises:

displacement calculation means for calculating a
displacement of the measurement ~~amount~~ amounts relating to the
5 image pattern of the subject image between the different image
reading sensitivities based on ~~the basis of~~ the subject image
read by the pre-reading ~~operation~~ means; and

maximum displacement extraction means for extracting an
image reading sensitivity having a maximum displacement among
10 displacements of the measurement amounts between the
different image reading sensitivities.

9. (Currently Amended) ~~A~~ The system according to claim 8,
wherein said displacement calculation means calculates a
differentiated value of the measurement amount on predetermined
columns of each row in the different regions.

10. (Currently Amended) ~~A~~ The system according to claim 1,
wherein said reading sensitivity extraction means comprises:

measurement amount comparison means for extracting maximum
and minimum values of ~~the~~ a measurement amount relating to the
5 image pattern of the subject image for each of the
different image reading ~~sensitivity~~ sensitivities based on ~~the~~

~~basis of~~ the subject image read by the pre-reading ~~operation~~
means;

dynamic range calculation means for calculating a dynamic
10 range of the measurement amount based on ~~the basis of~~ the maximum
and minimum values of the measurement amount extracted for said
each of the different image reading ~~sensitivity~~ sensitivities;
and

maximum dynamic range extraction means for extracting an
15 image reading sensitivity at which the dynamic range of the
measurement amount for said each of the different image reading
~~sensitivity~~ sensitivities maximizes and at which a displacement
of the dynamic range between the different image reading
sensitivities minimizes.

11. (Currently Amended) ~~A~~ The system according to claim 1,
~~which~~ further ~~comprises~~ comprising abnormal value removing means
for removing an abnormal value deviating from a main change trend
of ~~the~~ a measurement amount, from ~~the~~ a measurement amount
5 relating to the image pattern of the subject image read by the
pre-reading ~~operation~~ means, for each of the different image
sensitivities.

12. (Currently Amended) ~~A~~ The system according to claim 11,
wherein said abnormal value removing means removes the abnormal

value by performing Fourier transformation for the measurement amount and removing a predetermined high-frequency component from the frequency-converted measurement amount.

13. (Currently Amended) ~~A~~ The system according to claim 1, which further comprises:

measurement amount comparison means for extracting maximum and minimum values of ~~the~~ a measurement amount relating to the image pattern of the subject image for each of the different image reading ~~sensitivity~~ sensitivities based on the basis of the subject image read by the pre-reading operation means;

dynamic range calculation means for calculating a dynamic range of the measurement amount based on ~~the basis of~~ the maximum and minimum values of the measurement amount extracted for said each of the different image reading ~~sensitivity~~ sensitivities;

specific value extraction means for extracting, for said each of the different image reading ~~sensitivity~~ sensitivities, a specific value at which the dynamic range of the measurement amount for said each of the different image reading ~~sensitivity~~ sensitivities maximizes and at which a displacement of the dynamic range between the different image reading sensitivities maximizes; and

abnormality determination means for determining presence/absence of an abnormality contained in the subject image based on ~~the basis of~~ the specific value.

14. (Currently Amended) ~~A~~ The system according to claim 1, wherein:

each of the photosensors ~~has~~ comprises: (i) a source electrode and drain electrode, (ii) formed via a channel region made from a semiconductor layer formed between the source electrode and drain electrode, and (iii) a top gate electrode and bottom gate electrode formed at least respectively on and below the channel region via with insulating films provided between the top gate electrode and bottom gate electrode and the channel region,

~~either~~ one of the top gate electrode side and bottom gate electrode side is ~~used as~~ a light irradiation side, and

charges corresponding to a light quantity irradiated from the light irradiation side are generated and accumulated in the channel region.

15. (Currently Amended) A drive control method for a photosensor system ~~having a photosensor array constituted by two dimensionally arraying~~ including a plurality of photosensors in a two-dimensional array, said method comprising ~~the steps of:~~

- 5 executing a pre-reading operation of ~~reading~~ causing a
subject image ~~while changing an~~ to be read by different regions
of the photosensor array using different image reading
~~sensitivity of the photosensor array at~~ sensitivities in a
plurality of stages, prior to an image reading operation;
- 10 extracting an image reading sensitivity suitable for the
image reading operation of the subject image based on the basis
~~of a comparison of~~ predetermined measurement ~~amount relating~~
amounts which relate to an image pattern patterns of the subject
image read by the pre-reading operation and which correspond to
15 the different regions of the photosensor array;
- setting the extracted image reading sensitivity as a reading
sensitivity in the reading operation of the subject image; and
- executing the image reading operation of reading the subject
image at the set reading sensitivity.

16. (Currently Amended) ~~A~~ The method according to claim 15,
wherein the pre-reading operation is executed by the setting
different image reading sensitivities stepwise for respective
rows of the photosensor array and reading the subject image.

17. (Currently Amended) ~~A~~ The method according to claim 15,
wherein the predetermined measurement ~~amount is~~ amounts

comprise lightness data corresponding to the image pattern of the subject image read by the pre-reading operation.

18. (Currently Amended) ~~A~~ The method according to claim 15, wherein the image reading sensitivity of the photosensor array is set by adjusting a photosensor charge accumulating period ~~of the photosensor~~.

19. (Currently Amended) ~~A~~ The method according to claim 15, wherein ~~the step of~~ extracting the image reading sensitivity comprises ~~the steps of~~:

5 extracting maximum and minimum values of ~~the~~ a measurement amount relating to the image pattern of the subject image for each of the different image reading ~~sensitivity~~ sensitivities based on ~~the basis of~~ the subject image read by the pre-reading operation;

10 calculating a dynamic range of the measurement amount based on ~~the basis of~~ the maximum and minimum values of the measurement amount extracted for each of the different image reading ~~sensitivity~~ sensitivities; and

15 extracting an image reading sensitivity having a maximum dynamic range among dynamic ranges of the measurement amounts calculated for ~~each~~ the image reading ~~sensitivity~~ sensitivities.

20. (Currently Amended) ~~A~~ The method according to claim 15,
wherein ~~the step of~~ extracting the image reading sensitivity
comprises ~~the steps of~~:

calculating a displacement of the measurement ~~amount~~ amounts
5 relating to the image pattern of the subject image between the
different image reading sensitivities based on ~~the basis of~~ the
subject image read by the pre-reading operation; and

extracting an image reading sensitivity having a maximum
displacement among displacements of the measurement amounts
10 between the different image reading sensitivities.

21. (Currently Amended) ~~A~~ The method according to claim 15,
wherein ~~the step of~~ extracting the image reading sensitivity
comprises ~~the steps of~~:

extracting maximum and minimum values of ~~the~~ a measurement
5 amount relating to the image pattern of the subject image for
each of the different image reading ~~sensitivity~~ sensitivities
based on ~~the basis of~~ the subject image read by the pre-reading
operation;

calculating a dynamic range of the measurement amount
10 based on ~~the basis of~~ the maximum and minimum values of the
measurement amount extracted for said each of the different image
reading ~~sensitivity~~ sensitivities; and

extracting an image reading sensitivity at which the dynamic range of the measurement amount for said each of the
15 different image reading ~~sensitivity~~ sensitivities maximizes and
at which a displacement of the dynamic range between the
different image reading sensitivities minimizes.

22. (Currently Amended) ~~A~~ The method according to claim 15,
wherein the step of extracting the image reading sensitivity
comprises the steps of:

extracting maximum and minimum values of ~~the~~ a measurement
5 amount relating to the image pattern of the subject image for
each of the different image reading ~~sensitivity~~ sensitivities
based on ~~the basis of~~ the subject image read by the pre-reading
operation;

calculating a dynamic range of the measurement amount
10 based on ~~the basis of~~ the maximum and minimum values of the
measurement amount extracted for said each of the different image
reading ~~sensitivity~~ sensitivities;

extracting, for said each of the different image reading
~~sensitivity~~ sensitivities, a specific value at which the dynamic
15 range of the measurement amount for said each of the different
image reading ~~sensitivity~~ sensitivities maximizes and at which a
displacement of the dynamic range between the different image
reading sensitivities maximizes; and

20 determining presence/absence of an abnormality contained in
the subject image based on ~~the basis of~~ the specific value.

23. (Currently Amended) ~~A~~ The method according to claim 15,
wherein the ~~step of~~ extracting the image reading sensitivity
comprises ~~the step of:~~ removing an abnormal value deviating from
a main change trend of ~~the~~ a measurement amount, from ~~the~~
5 a measurement amount relating to the image pattern of the subject
image for each of the different image reading ~~sensitivity~~
sensitivities.

24. (Currently Amended) ~~A~~ The method according to claim 23,
wherein the ~~step of~~ removing the abnormal value from the
measurement amount comprises ~~the step of:~~ performing Fourier
transformation for the measurement amount and removing a
5 predetermined high-frequency component from the frequency-
converted measurement amount.

25. (Currently Amended) ~~A~~ The method according to claim 15,
wherein:

each of the photosensors ~~has~~ comprises: (i) a source
electrode and drain electrode, (ii) ~~formed via~~ a channel region
5 made from a semiconductor layer formed between the source
electrode and drain electrode, and (iii) a top gate electrode and

bottom gate electrode formed ~~at least~~ respectively on and below
the channel region ~~via~~ with insulating films provided between the
top gate electrode and bottom gate electrode and the channel
10 region,

~~either~~ one of the top gate electrode side and bottom gate
electrode side is ~~used as~~ a light irradiation side, and

charges corresponding to a light quantity irradiated from
the light irradiation side are generated and accumulated in the
15 channel region.